



# 7

Approved for use through 10/31/2002. OMB 0651-0031  
U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449A/PTO

## INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(use as many sheets as necessary)

Sheet 1 of 4

Complete if Known

|                        |                        |
|------------------------|------------------------|
| Application Number     | 10/004,867             |
| Filing Date            | December 7, 2001       |
| First Named Inventor   | Serge Beaudoin, et al. |
| Group Art Unit         | <del>1644</del> 1624   |
| Examiner Name          | TBA                    |
| Attorney Docket Number | 4208.00034             |

REC'D CENTER 1600/2900  
AUG 28 2003

| U.S. PATENT DOCUMENTS |                       |  |                                |  |  |
|-----------------------|-----------------------|--|--------------------------------|--|--|
| Examiner Initials *   | Cite No. <sup>1</sup> | Document Number                            | Publication Date<br>MM-DD-YYYY | Name of Patentee or Applicant of<br>Cited Document | Pages, Columns, Lines Where Relevant<br>Passages or Relevant<br>Figures Appear |
|                       |                       | Number - Kind Code <sup>2</sup> (if known) |                                |  |  |
| TNT                   | ✓                     | US- 2,298,443                              | 10-1942                        | Weissberger  | 35/6   |
|                       | ✓                     | US- 4,422,871                              | 12-1983                        | Schirmer et al.                                    | 71/120   |
|                       | ✓                     | US- 4,975,453                              | 12-04-1990                     | Becker, et al.                                     | 514/456  |
|                       | ✓                     | US- 5,006,512                              | 04-09-1991                     | Ohnishi  | 514/21   |
|                       | ✓                     | US- 5,215,985                              | 06-01-1993                     | Murphy, et al.                                     | 514/212  |
|                       | ✓                     | US- 5,234,947                              | 08-10-1993                     | Cherksey   | 514/449  |
|                       | ✓                     | US- 5,242,947                              | 09-07-1993                     | Cherksey, et al.                                   | 514/628  |
|                       | ✓                     | US- 5,310,932                              | 05-10-1994                     | Atwal, et al.                                      | 548/454  |
|                       | ✓                     | US- 5,328,830                              | 07-12-1994                     | Janis, et al.                                      | 435/21   |
|                       | ✓                     | US- 5,356,775                              | 10-18-1994                     | Herbert, et al.                                    | 435/6  |
|                       | ✓                     | US- 5,401,758                              | 03-28-1995                     | Atwal, et al.                                      | 514/353  |
|                       | ✓                     | US- 5,401,848                              | 03-28-1995                     | Atwal  | 546/153  |
|                       | ✓                     | US- 5,451,580                              | 09-19-1995                     | Murphy, et al.                                     | 514/212  |
|                       | ✓                     | US- 5,453,421                              | 09-26-1995                     | Atwal, et al.                                      | 514/100  |
|                       | ✓                     | US- 5,486,515                              | 01-23-1996                     | Brown, et al.                                      | 514/229.8  |
|                       | ✓                     | US- 6,015,822                              | 01-12-2000                     | Brendel et al.                                     | 514/357  |
|                       | ✓                     | US- 6,083,986                              | 07-04-2000                     | Castle, et al.                                     | 514/586  |
| TNT                   | ✓                     | US- 6,333,337                              | 12-25-2001                     | Gross, et al.                                      | 514/307  |

Examiner  
Signature

*W. Brown*

Date  
Considered

11/15/03

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>1</sup> Applicant's unique citation designation number (optional). <sup>2</sup> See Kinds Codes of USPTO Patent Documents at [www.uspto.gov](http://www.uspto.gov) or MPEP 901.04.

<sup>3</sup> Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). <sup>4</sup> For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. <sup>5</sup> Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. <sup>6</sup> Applicant is to place a check mark here if English language Translation is attached.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.



PTO/SB/08A (10-01)

Approved for use through 10/31/2002. OMB 0651-0081  
U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449A/PTO

**INFORMATION DISCLOSURE  
STATEMENT BY APPLICANT**

(use as many sheets as necessary)

Sheet 2 of 4

**Complete if Known**

|                        |                        |
|------------------------|------------------------|
| Application Number     | 10/004,867             |
| Filing Date            | December 7, 2001       |
| First Named Inventor   | Serge Beaudoin, et al. |
| Group Art Unit         | 1614                   |
| Examiner Name          | TBA                    |
| Attorney Docket Number | 4208.00034             |

TECH CENTER 1630012900  
AUG 28 2003  
REC-1**FOREIGN PATENT DOCUMENTS**

| Examiner<br>Initials* | Cite<br>No. <sup>1</sup> | Foreign Patent Document   | Publication<br>Date<br>MM-DD-YYYY | Name of Patentee or<br>Applicant of Cited<br>Document | Pages, Columns, Lines,<br>Where Relevant<br>Passages or Relevant<br>Figures Appear | T <sup>6</sup> |
|-----------------------|--------------------------|---|-----------------------------------|---|--|----------------|
|                       |                          | Country Code <sup>3</sup> - Number <sup>4</sup> - Kind Code <sup>5</sup> (if known) |                                   |   |  |                |
| TNT                   | ✓                        | 0 286 278   | 10-1988                           | EP  |  |                |
|                       | ✓                        | 0 317 321   | 5-1989                            | EP  |  |                |
|                       | ✓                        | 0 321 175   | 8-1989                            | EP  |  |                |
|                       | ✓                        | 0 472 053   | 2-1992                            | EP  |  |                |
|                       | ✓                        | 0 488 616   | 6-1992                            | EP  |  |                |
|                       | ✓                        | 0 587 180   | 3-1994                            | EP  |  |                |
|                       | ✓                        | 0 608 858   | 8-1994                            | EP  |  |                |
|                       | ✓                        | 0915087   | 5-1999                            | EP  |  |                |
|                       | ✓                        | 95/18617  | 7-1995                            | WO  |  |                |
|                       | ✓                        | 95/26342  | 10-1995                           | WO  |  |                |
|                       | ✓                        | 97/25983  | 7-1997                            | WO  |  |                |
|                       | ✓                        | 97/26300  | 7-1997                            | WO  |  |                |
| TNT                   | ✓                        | 9937607   | 7-1999                            | WO  |  |                |

Examiner  
SignatureDate  
Considered

11/17/03

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>1</sup> Applicant's unique citation designation number (optional). <sup>2</sup> See Kinds Codes of USPTO Patent Documents at [www.uspto.gov](http://www.uspto.gov) or MPEP 901.04.

<sup>3</sup> Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). <sup>4</sup> For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. <sup>5</sup> Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. <sup>6</sup> Applicant is to place a check mark here if English language Translation is attached.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.



Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number

Substitute for form 1449A/PTO

## INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(use as many sheets as necessary)

Sheet 3 of 4

### Complete if Known

|                        |                        |
|------------------------|------------------------|
| Application Number     | 10/004,867             |
| Filing Date            | December 7, 2001       |
| First Named Inventor   | Serge Beaudoin, et al. |
| Group Art Unit         | 1614 1624              |
| Examiner Name          | TBA                    |
| Attorney Docket Number | 4208.00034             |

### OTHER PRIOR ART -- NON PATENT LITERATURE DOCUMENTS

| Examiner<br>Initials * | Cite<br>No. <sup>1</sup> | Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published. | T <sup>2</sup> |
|------------------------|--------------------------|---|----------------|
| MT                     | 1. ✓                     | Still, et al., "Rapid Chromatographic Technique for Preparative Separation with Moderate Resolution," J. Org. Chem., Vol. 43, No. 14, 1978, 2923-2925.  |                |
|                        | 2. ✓                     | Castle, et al., "Characterization of 4-Aminopyridine Block of the Transient Outward K <sup>+</sup> Current in Adult Rat Ventricular Myocytes," The Journal of Pharmacology and Experimental, Vol. 264, No. 3, 1450-1459 (1993).                                 |                |
|                        | 3. ✓                     | Deal, et al., "Molecular Physiology of Cardiac Potassium Channels," Physiological Reviews, Vol. 76, No. 1, Jan. 1996, 49-67.  |                |
|                        | 4. ✓                     | Wang, et al., "Sustained Depolarization-Induced Outward Current in Human Atrial Myocytes, Evidence for a Novel Delayed Rectified K <sup>+</sup> Current Similar to Kv1.5 Cloned Channel Current," Circulation Research, Vol. 73, No. 6, Dec. 1993, 1061-1076.   |                |
|                        | 5. ✓                     | Hamill, "Improved Patch-Clamp Techniques for High-Resolution Current Recording from Cells and Cell-Free Membrane Patches," Pflüger, Archiv, (1981) 391:85-100.  |                |
|                        | 6. ✓                     | Fedida, et al., "Identity of a Novel Delayed Rectifier Current From Human Heart with a Cloned K <sup>+</sup> Channel Current," Circulation Research, Vol. 73, No. 1, July 1993, 210-216.  |                |
|                        | 7. ✓                     | Chandy, et al., "Voltage-Gated Potassium Channels Are Required For Human T. Lymphocyte Activation," J. Exp. Med., Vol. 160, Aug. 1984, 369-385.   |                |
|                        | 8. ✓                     | Sanguinetti, "Modulation of Potassium Channels by Antiarrhythmic and Antihypertensive Drugs," Hypertension, Vol. 19, No. E, March 1992, 228-236.  |                |
|                        | 9. ✓                     | Lynch, et al., "Therapeutic Potential of Modulating Potassium Currents in the Diseased Myocardium," The FASEB Journal, Vol. 6, Aug. 1992, 2952-2960.  |                |
|                        | 10. ✓                    | Colatsky, et al., "Channel Specificity in Antiarrhythmic Drug Action," Circulation, Vol. 82, No. 6, Dec. 1990-2235-2242.  |                |
|                        | 11. ✓                    | Halliwel, "K <sup>+</sup> Channels in the Central Nervous System," 348-381 (1988).  |                |
|                        | 12. ✓                    | Amos, et. al. "Differences Between Outward Currents of Human Atrial and Subepicardial Ventricular Myocytes," Journal of Physiology, (1986), 491.1, 31-50.   |                |
|                        | 13. ✓                    | Wang, et al., "Effects of Flecanide, Quinidine, and 4-Aminopyridine on Transient Outward and Ultrarapid Delayed Rectifier Currents in Human Atrial Myocytes," The Journal of Pharmacology and Experimental Therapeutics, Vol. 272, No. 1, 184-196 (1995).       |                |
|                        | 14. ✓                    | Lin, et al., "Voltage-Gated Potassium Channel Regulate Calcium-dependent Pathways Involved in Human T Lymphocyte Activation," J. Exp. Med., Vol. 177, 637-645 (1993).   |                |
| WNT                    | 15. ✓                    | Kaczorowski, et al., "Lymphocyte Ion Channels as a Target for Immunosuppression," Perspective in Drug Discovery and Design 2 (1994) 233-248.  |                |

Examiner  
Signature

Date  
Considered

11/17/03

\* EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>1</sup> Unique citation designation number (optional). <sup>2</sup> Applicant is to place a check mark here if English language Translation is attached.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

TECH CENTER 1600/2900

AUG 28 2003



PTO/SB/08B(10-01)

Approved for use through 10/31/2002. OMB 0651-0034

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449A/PTO

# INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(use as many sheets as necessary)

Sheet 4 of 4

## Complete if Known

|                        |                        |
|------------------------|------------------------|
| Application Number     | 10/004,867             |
| Filing Date            | December 7, 2001       |
| First Named Inventor   | Serge Beaudoin, et al. |
| Group Art Unit         | <del>1611</del> 1624   |
| Examiner Name          | TBA                    |
| Attorney Docket Number | 4208.00034             |

## OTHER PRIOR ART -- NON PATENT LITERATURE DOCUMENTS

| Examiner Initials * | Cite No. <sup>1</sup> | Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published. | T <sup>2</sup>                              |
|---------------------|-----------------------|---|---|
| JMN                 | 16. ✓                 | Leonard, et al., "Selective Blockers of Voltage-Gated K <sup>+</sup> Channels Depolarize Human T Lymphocytes: Mechanism of the Antiproliferative Effect of Charybdotoxin", Vol. 89, 10094-10098, Nov. 1992.   |   |
|                     | 17. ✓                 | Doupnik, et al., "The Inward Rectifier Potassium Channel Family," Current Opinion in Neurobiology, 1995, 5:268-277.   |   |
|                     | 18. ✓                 | Chandy, et al., "Voltage-Gated Potassium Channel Genes," Handbook of Receptors and Channels, 1-71 (1995).   |   |
|                     | 19. ✓                 | Epps et al., "Chemistry and Physics of Lipids, 69 (1994) pp. 137-150.   |   |
|                     | 20. ✓                 | WO 95-18617 Abstract, COHEN ET AL., 1995.   |   |
|                     | 21. ✓                 | Chem. Abs., Vol. 104, No. 9 Abs, No. 68632 (03/03/86).  |   |
|                     | 22. ✓                 | International Search Report PCT/US97/12559, 1997.   |   |
|                     | 23. ✓                 | Dialog Web Output, Derwent World Patents Index, Records for: pn=EP 915087, 2001.  |   |
|                     | 24. ✓                 | International Search Report PCT/US 00/34765, 2000.  |   |
|                     | not available         | 25.   | International Search Report dated July 2002 |
| 26.                 |                       | Gisbert Schneider, et al. "Virtual Screening for Bioactive Molecules by Evolutionary De Novo Design", Angewandte Chemie, International Edition (200), 39(22), 4130-4133, (2000).  |   |

|                    |  |                 |          |
|--------------------|--|-----------------|----------|
| Examiner Signature |  | Date Considered | 11/17/03 |
|--------------------|--|-----------------|----------|

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>1</sup> Applicant's unique citation designation number (optional). <sup>2</sup> See Kinds Codes of USPTO Patent Documents at [www.uspto.gov](http://www.uspto.gov) or MPEP 901.04.  
<sup>3</sup> Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). <sup>4</sup> For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. <sup>5</sup> Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. <sup>6</sup> Applicant is to place a check mark here if English language Translation is attached.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.